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Breaking the deadlock in the space mining legal debate

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Abstract:

We offer a novel perception on breaking the deadlock over the space mining governance debate. We do so by unveiling the dynamics of how certain policy making conducted under the pressure of the legal uncertainty associated with the lack of a legal framework for the utilization of space resources leads to actions driven primarily by a national outlook – namely interests towards the respective nation state. The unilateral approaches adopted by the USA, Luxembourg, the UAE and Japan have been criticized by both members of the UN COPUOS and scholars since they do not fully address the cosmopolitan ideas enshrined in international space law. This situation of current legal uncertainty is not visibly attractive to big corporations capable of launching a space mining economy, and the recent fate of tiny startups, which were sold in order to obtain technology unrelated to space mining, finally confirms the case in point. We argue and show that a properly designed national legislation reflecting cosmopolitan ideals can become the key to breaking this deadlock. More specifically, the national legislation needs to reflect principles known from political science theory referring to legal cosmopolitanism and foreign policy creativity, making the given state an agent of cosmopolitan responsibility. Otherwise, national law can hardly be compatible with both customary international law and the Outer Space Treaty, particularly with the requirement that the exploration and use of outer space shall be carried out for the benefit and in the interest of all countries, irrespective of their degree of economic or scientific development. The solution to the deadlock we offer here is not a unique key to a unique lock but rather an

explanation of why and how we should shift our modes of perception of what we are trying to achieve here.

Keywords: space mining; Outer Space Treaty; national space mining law; cosmopolitanism; responsible cosmopolitan state

1. Introduction

Against the background of the rapid technological development and recent advances in our understanding of the Solar System, space resources are thought to be soon within our reach. Space exploration, particularly missions aimed at studying asteroids, or the Moon surface, revealed the presence of a rich diversity of minerals, gases as well as water there. Space resources may be used for the construction of lunar/celestial infrastructures,[1] or as a source of energy, particularly for the production of propellants and power generation for more affordable and flexible transportation.[2] Since their utilization is crucial to enable further exploration of the Moon and the Solar System, space mining has moved to the forefront of the agenda of many space agencies. According to the European Space Agency, space resources offer the potential to locally derive what is needed for living and working in space.[3] Moreover, the growth of commercial opportunities in space related to the utilization of space resources has driven a growing interest of the private sector.

However, international space law does not provide clear rules under which space resources may be utilized. The Moon Agreement, the first international treaty explicitly recognizing the

potential benefits which may be derived from the exploitation of space resources, was not widely accepted and the contours of the legal regime governing space mining set by the agreement were not further elaborated. In addition, the Moon Agreement was ratified / acceded to by only 18 states. The related activities of the rest of the international community are governed by either the Outer Space Treaty or customary international law. However, the Outer Space Treaty does not explicitly address the utilization of space resources, and norms of customary international law are not helpful either since no commercial space mining operations have ever been carried out.

In this article, we offer a perspective that reflects the core principles of international space law, supports space mining and proposes a specific national approach to the national legislation that would be aligned with international law and enable space mining without all the fuss. It is a fact that the utilization of space resources per se is prohibited by neither customary international law nor the Outer Space Treaty; however, one should ask whether such an approach strengthens the harmony between the involved actors at the international level. As we can see, it does not. Hence, we propose an approach building on the principles enshrined in international space law – a cosmopolitan approach towards the utilization of space resources. From the international law perspective, areas recognized as a *res communis omnium* (the high seas,[i] the deep seabed,[ii] and outer space) are primarily governed by public international law. More specifically, international

[i] According to Art. 89 of the UNCLOS, no state may validly purport to subject any part of the high seas to its sovereignty.

[ii] Pursuant to Art. 137 of the UNCLOS, states are precluded from claiming or exercising sovereignty or sovereign rights over any part of the deep seabed and its resources.

treaties governing space-related activities are traditionally discussed and negotiated by the Committee on the Peaceful Uses of Outer Space (COPUOS) that was set up by the General Assembly in 1959 to govern the exploration and use of space for the benefit of all humanity - namely for peace, security and development. Regardless of the growing interest in space mining expressed by space agencies and the private sector, the much desired legal framework for it has not yet been adopted. Only recently, the UN COPUOS's Legal Subcommittee established a working group under the agenda item on the general exchange of views on potential legal models for activities in exploration, exploitation, and utilization of space resources.[iii] In the face of a growing deadlock at international forums, several countries – the USA, Luxembourg, the UAE and Japan – adopted national legislations addressing the legal uncertainty associated with the lack of a legal framework for the utilization of space resources. However, such an approach has been criticized by both scholars and some members of the UN COPUOS[4] and we would argue that it was driven by the *national outlook* while the Outer Space Treaty is a celebration of humanity translating the cosmopolitan outlook into an international treaty.

The national outlook and cosmopolitan outlook are concepts coined by Ulrich Beck.[5] The national outlook is, to Beck, a prison error of identity, a territorial prison of identity, and methodological nationalism presenting the state, its society and nationality as natural forms of the

[iii] 'XIII. General Exchange of Views on Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources. Draft Report of the Legal Subcommittee of the UN COPUOS on Its Sixtieth Session (31 May - 11 June 2021) UN Doc A/AC.1'.

modern world, while the cosmopolitan outlook questions exactly that conviction of such a natural state of political affairs and calls upon us to reconfigure our modes of perception following several constitutive cosmopolitan principles. Beck is not a classical cosmopolitan utopian; his cosmopolitan thought is filled with affirmations of an inevitable conflict between cultures and our ability to understand this dynamic, our willingness to understand each other and overcome the tensions because it will finally enrich all cultures so that they will become a single culture of a global society while preserving the riches of the local or national.

Therefore, it is the national outlook which makes any of the ongoing discussions over space governance tense because it tacitly assumes states to be the political entities to conduct any activities in space for various, presumably national, purposes regardless of the broader mission humanity has in space. The lack of imagination, the laziness that prevents us from reconfiguring our modes of perception, and the unwillingness to accept the deep cosmopolitan meaning behind the words in the OST such as "envoys of mankind"[6] are the prison of identity Beck is talking about. If the situation is perceived from the cosmopolitan outlook, there are no tensions but only discussions of what is the best approach that will benefit us all and open space for all the possible ideas of what humanity can do in space. One would ask, therefore, why we are not openly promoting a cosmopolitan approach to solve this dispute over exploitation of space resources. The answer is that politicians are expected to execute nationally-oriented policy first[7] as they are representing nation states on the inter*national* level but it is up to the politicians to bring cosmopolitan responsibility to global politics.

First, the core of our argument in this paper is that this deadlock can be overcome by any state that wants to become an agent of cosmopolitan responsibility, a state sensible to its role as a cosmopolitan actor with its own cosmopolitan responsibilities.[8] The same sensibility led to the ideas for the establishment of all post-war global governance structures of international organizations regardless of their current pathologies.

Second, as the requirement for such a sensibility related to space resources exploitation governance is significantly less complicated and less complex in its implementation in relation to domestic political pressures than the whole governance system after World War II, it requires a specific imagination, willingness and agile diplomatic power to become achievable. We provide a perspective of how the problem can be approached with a tiny possible solution at the end as an example and a guidance for our way of thinking, but not as the sole solution of the dilemma. Third, in the end, a broadly accepted governance of space resources exploitation is in the interest of all, not just peoples and countries but also corporations that will ensure its continuity and integration into the economic development of humanity.

At the end of the article, we argue that national law can reflect the cosmopolitan visions enshrined in international space law, therefore, paradoxically, national law can unlock the great potential of outer space and at the same time contribute to the common benefit of all countries and peoples.

2. The current legal uncertainty of space mining

From the international law perspective, outer space is an area recognized as a *res communis omnium.*[9,10] These areas are not subject to national appropriation by claim of sovereignty, by means of use or occupation or by any other means (this is often referred to as the non-appropriation principle[iv]).[11] Therefore, outer space and other regimes excluding territorial sovereignty (such as the high seas,[v] or the deep seabed[vi]) are primarily governed by public international law. However, international law describing the governance of space activities does not provide for specific rules setting out how the utilization of space resources should be carried out. The only international treaty having such ambitions is the Moon Agreement. Bearing in mind potential benefits which may be derived from the exploitation of natural resources of the Moon and other celestial bodies, the Moon Agreement sets forth the basic principles governing the utilization of space resources. However, the Moon Agreement has only 18 state parties, none of which are significant space powers.

Until a widely recognized legal framework is established, the conditions under which space mining-related activities should be carried out can only be derived from general principles of international space law and vague provisions of the Outer Space Treaty. The legal uncertainty

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[iv] See OST, Art. IV.

[v] According to Art. 89 of the UNCLOS, no state may validly purport to subject any part of the high seas to its sovereignty.

[vi] Pursuant to Art. 137 of the UNCLOS, states are precluded from claiming or exercising sovereignty or sovereign rights over any part of the deep seabed and its resources.

associated with the interpretation and application of key principles of international space law in relation to the utilization of space resources is considered as a significant obstacle preventing the private sector from making substantial investments into space mining. According to Prof. Tronchetti, a major reason for the fact that states and private operators have not started to exploit the resources of the Moon and other celestial bodies yet is the absence of rules setting out how this exploitation should be carried out.[12]

2.1. The vague wording of the principles in international space law

Given the absence of a specific legal framework, those who aim to exploit space resources are required to deduce the very legality of such activities as well as the legal requirements from vague principles of international space law. The principles of international space law enshrined in the OST and deriving from international customary law, neither explicitly allow nor explicitly prohibit space mining.[13] The key principles affecting the legality/illegality of space mining include the principle of *non-appropriation*, the principle that space exploration and the use of outer space shall be carried out for the *benefit and in the interest of all countries*, and the *freedom of exploration*. All have been incorporated into the OST, particularly into Art. I and Art. II. According to Art. I, *"Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies."*

While referring to *Cologne Commentary on Space Law*, the authors of this paper agree with Prof. Hobe that the term *"use"* usually refers to both the non-economic and economic utilization and thus, the use of outer space for economic ends should include exploitation with the objective

of making an economic profit.[14] In addition, other provisions of the OST Art. I, as well as its preamble (*"inspired by the great prospects opening up before mankind as a result of man's entry into outer space"*), suggest that the treaty aims to promote the use of outer space rather than restrict it.[15]

The non-appropriation principle may be found in Art. II of the OST and reads as follows: *"Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means."* While an international and broadly recognized legal framework governing space mining would be perfectly compatible with the non-appropriation principle (just like the one that was established for the purposes of deep seabed mining), concerns are mostly raised in relation to the attempts to provide a legal framework via national legislation (as was done by the USA, Luxembourg and, most recently, the UAE and Japan). Some delegations at the UN COPUOS expressed their concerns that such national legislation may amount to a sovereignty claim or a national appropriation, and thus could constitute a violation of the OST.[16] The authors of this paper argue that the non-appropriation principle per se does not preclude the utilization of space resources. It is worth emphasizing that none of the regimes built on this principle (e.g. the legal regime governing the high seas, or the one governing the deep seabed) preclude the utilization of natural resources either.

The application of the requirement that the space exploration and use of outer space shall be carried out for the benefit and in the interest of all countries in relation to the utilization of space resources appears to be the most controversial. The vague wording of the so-called *common benefit clause* allows for a broad range of interpretations. One may claim that every peaceful space mission

should be considered compatible with Art. I of the OST since we all indirectly benefit from progress in science and the development of new technologies building on space industry-related innovations as well as observations made in outer space (the so-called space tech spin offs). Article I of the OST may be interpreted also as an obligation imposed on developed countries to assist developing countries that do not have the necessary technologies for space travel at their disposal, which prevents them from benefiting from the exploration and use of outer space (our emphasis on the wording of *"irrespective of their degree of economic or scientific development"*).[vii] In contrast, others may argue that the *common benefit clause* amounts to the obligation of sharing the benefits of outer space activities with all countries.

It should be mentioned that some light on the interpretation of the *common benefit clause* has been shed by the UNGA Declaration on Space Benefits.[17] It did not mention that the clause should be interpreted as imposing an obligation on space-faring nations to grant benefits to non-space-faring nations.[14] However, the Declaration addressed only benefits from the use of outer space deriving from international cooperation. The authors of this article believe that the OST does not limit the ways to comply with the common benefit clause. In other words, benefit sharing *per se* is not excluded from the possible ways to comply with the common benefit clause and it solely

[vii] All States, particularly those with relevant space capabilities and programmes for the exploration and use of outer space, should contribute to promoting and fostering the related international cooperation on an equitable and mutually acceptable basis. In this context, particular attention should be given to the benefit for and the interests of developing countries and countries with incipient space programmes stemming from such an international cooperation conducted with countries with more advanced space capabilities.

depends on the creativity of states how they decide to do so. This perspective is absolutely crucial in breaking the deadlock as we believe that exactly this creativity can be either exclusive (to keep the deadlock) or inclusive (to break the deadlock).

According to the Vienna Convention of the Law of Treaties, a treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context (textual interpretation) and in the light of its object and purpose (purposive interpretation).[viii] If some experts, scholars or lawyers use solely the textual interpretation of international law, they tend to explain the objective background, doubt the customary character of international law and look at direct definitions that are readable from the text. Based on such an interpretation, they are following it solely and tend to say that something has not been defined (e.g. that space has not been defined as res communis omnium) and based on that assertion they tend to vindicate any intrusive actions in the regulated realm by international law without paying attention to what was the purpose and good faith of writing the treaty.

A cautious analysis of the objectives the parties to an international treaty wanted to achieve serves as a helpful interpretative tool, especially when the ordinary meaning of the treaty raises questions. The OST was adopted to ensure peace and harmony in space exploration in the name of humankind and with the idea that this peace and harmony will be inclusive for all countries

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[viii] See Art. 31 of the United Nations Convention on the Law of Treaties Signed at Vienna on 23 May 1969, Entry into Force: 27 January 1980.

regardless their economic development. Its preamble reads as follows: *"Inspired by the great prospects opening up before mankind as a result of man's entry into outer space, desiring to contribute to broad international co-operation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes, believing that such co-operation will contribute to the development of mutual understanding and the strengthening of friendly relations between states and peoples."* In other words, the common interests of all mankind lie at the core of the Outer Space Treaty. Having said that, national space law should not only reflect the common interests of all mankind, but it should strive to address them as much as possible.[ix]

2.2. Private investors looking for opportunities

The US companies Planetary Resources,[18] Deep Space Industries[19] and Moon Express[20] are the most notable pioneers of commercial space mining. Planetary Resources carried out several successful flight tests of asteroid prospecting technologies in Earth's orbit; however, it failed to close a funding round and experienced financial difficulties.[21] Deep Space Industries sought to develop technologies for prospecting for and eventually extracting space resources, such as water

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[ix] See Case Concerning Oil Platforms (Islamic Republic of Iran v. United States of America), International Court of Justice (ICJ), 6 November 2003; Rights of Nationals of the United States of America in Morocco (France v. U.S.), International Court of Justice (ICJ), 27 August 1952; Colombian-Peruvian Asylum (Colombia v. Peru), International Court of Justice (ICJ), 20 November 1950.

ice, from asteroids that would be pivoted towards small satellites and the production of a propulsion system but the company later dropped its initial business plan and was sold without any intention to continue its asteroid mining activities. Moon Express is the only pioneer that stuck with its original objective. It became the first company to receive U.S. government approval to send a robotic spacecraft beyond the Earth's orbit to the Moon. However, its Harvest Moon expedition, including the first commercial sample return mission scheduled for 2020, has not yet materialized. iSpace is the first privately funded Japanese-led mission to land on the Moon. Its aims are i) a soft landing on the Moon, ii) a soft landing on the Moon and deployment of a rover for surface exploration and data collection, and iii) a soft landing on the Moon and deployment of a rover for the discovery and development of lunar resources.[22]

Although space mining remains an industry that is not yet economical, the private sector is expected to be the driving force;[x] even if not because of its own incentive, it will definitely become the supplier for nationally driven space programs. Nonetheless, private investors recognize the absence of a legal framework governing space mining as a significant obstacle.[23] The importance of stability and predictability in both domestic and international legal landscapes for entrepreneurs seeking to commence the utilization of space resources, has been clearly recognized by Peter Marquez, the vice president for global engagement at Planetary Resources, before the US Senate Subcommittee on Space, Science, and Competitiveness in 2017.[24] Hence, he encouraged the US to

[x] See https://www.nasa.gov/content/commercial-lunar-payload-services

be actively engaged in the international community in order to find a common direction for the interpretation of the OST in a manner that promotes innovative, ground-breaking commercial space activities.

Since the fundamental principles of international space law are not consistently interpreted and applied, private investors view space mining sector as too risky. Take into consideration that the whole space mining debate is linked to several failed, sold or tiny start-ups unrelated to the mining business on Earth, while the biggest global multibillion dollar mining corporations remain silent about space mining despite its economic prospects that have been already recognized but with a focus on deregulation as the way to its incentivization.[25]

2.3. The deadlock at the UN COPUOS and national legislations

Especially against the background of rapid advances in space technology, a better understanding of the composition of celestial bodies and a growing interest in space resources on the part of space agencies and the private sector led to the inclusion of a new item on the agenda of the Legal Subcommittee of the UN COPUOS in 2017 – "General exchange of views on potential legal models for activities in exploration, exploitation and utilization of space resources". However, due to divergent views among delegations, years of discussions had not addressed the needs expressed by the private sector and had not mitigated the investment risk associated with the interpretation and application of the principles of international space law. A working group under the agenda item on the general exchange of views on potential legal models for activities in

exploration, exploitation, and utilization of space resources, was finally established in 2021.[xi] In response to the demand from commercial companies for alternative means of addressing the legal uncertainty associated with extra-terrestrial mining, the U.S. adopted the Commercial Space Launch Competitiveness Act in 2015. Its Title IV was dedicated to space resource exploration and utilization and sought to address issues that were unsatisfactorily addressed at the international level.[26,27] The U.S. was recently followed by Luxembourg[xii], the United Arab Emirates[xiii] and Japan[xiv] in this regard. All these states aim to create an attractive business environment for private investors engaged in space activities and space mining in particular. It is worth mentioning that other states are considering the adoption of national laws addressing space mining as well.

By ratifying international treaties such as the OST, states agree to fulfill the international obligations set out in those treaties. They do so through national law. Art. 27 of the Vienna Convention on the Law of Treaties indicates that *"a party may not invoke the provisions of its*

[xi] 'XIII. General Exchange of Views on Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources. Draft Report of the Legal Subcommittee of the UN COPUOS on Its Sixtieth Session (31 May - 11 June 2021) UN Doc A/AC.1'.

[xii] Luxembourg – Law on Exploration and Use of Space Resources.

[xiii] United Arab Emirates – Federal Law No. 12 on the Regulation of the Space Sector, including provisions dealing with extraction, exploitation and utilization of space resources.

[xiv] Japan - The Act for Promotion of Business Activities regarding Exploration, and Exploitation of Space Resources.

internal law as justification for its failure to perform a treaty" and therefore a state is expected to ensure that its domestic law does not conflict with its international obligations.[28]

According to the US, the UAE, Luxembourg and Japan's national law, space resources can be appropriated. Such recognition is of great importance for commercial companies. Once property rights are recognized at least at the national level, space resources brought back to Earth can be traded as well as legally protected. By doing so national space law can effectively address the legal uncertainty associated with the unclear status of natural resources under international space law.

According to the authors of this paper, the adoption of a national space mining law recognizing that space resources may be appropriated does not constitute a national appropriation. Since national law is only an expression of the given state's personal and quasi-personal jurisdiction (territorial jurisdiction is excluded in areas recognized as res communis omnium),[29,30] national law cannot effectively prevent others from exploring and using outer space. Moreover, for the sake of clarity, the US national law explicitly declares that by the enactment of its national space law, the United States does not assert its sovereignty or sovereign or exclusive rights or jurisdiction over, or ownership of outer space and/or its resources.

The most challenging aspect is to address the principle that the space exploration and use of outer space shall be carried out for the benefit and in the interest of all countries. Neither the US's, the UAE's, Luxembourg's nor Japan's national law addresses this requirement. The absence of any effort to make national space law compatible with this principle triggered an opposition among the delegates in the UN COPUOS.[31] It is worth mentioning that in response to the US national law adopted in 2017, some delegations argued that only a multilateral approach to addressing the issues

of space resources legality could ensure that states adhere to the principle of equality of access to space, and that the benefits of the exploration and use of outer space are enjoyed by all humanity; other delegations asserted that resolving a legal aspect of space resources based on the principle of 'first come, first served' was not desirable or compatible with the principles of equality of access to space and allocating its resources to all humanity.[16]

Having said that, the authors of this paper aim to suggest an inclusive approach to be taken when national space law is drafted to ensure its compatibility with international space law. If this is done, national space law may, in the end, be very attractive and provide a desirable protection of international law and certainty for investors, and lay down a legal framework that other states will be adopting instead of challenging.[32]

3. Breaking the deadlock by a state reflecting on its cosmopolitan responsibilities

3.1. Different perceptions of international law

The common public perception of international law is twofold. "Adhering to rules" people would perceive international law comparably to the national law system, and therefore believe that states must follow international law or some authority will enforce it. However, they would follow this perception until the moment they realize the nonexistence of that *sovereign* authority with the power to enforce the international law. On the other hand, "rules challenging" people would say that international law could be enforced by individual states if they are powerful enough or even by the international community; a state can follow the decision of such an authority if it considers it to be in the national interest. However, both perspectives miss the point that a sovereign is not

only the most powerful actor in the Hobbesian sense. *Sovereignty* is not a form of radical political autonomy free from requirements of international cooperation or obligations; Beardsworth argues that sovereignty in the sense of being a relational, social and legal construct (what the Peace of Westaphalia, stipulating the principle of sovereign independent states, is exactly about) is quite more persuasive and that national communal practices of self-determination, including democracy, have never been purely internal affairs.[8] The concept *sovereignty as autonomy*[33] provides an interpretation of sovereignty that oblige sovereign states to behave responsibly and with a reflection of others' interests. Based on this meaning, we follow the general perception in social sciences that international law is a *social process*, a reasoning on a *normative plane* in contrast to an empirical or factual one, or a *social reality*[34] one should reflect on to execute an effective foreign policy, nurture international relations and contribute to the international political stability, which is dependent on general predictability, transparency and confidence. Interpreting international law *purposively*, as described above, is the approach that has the potential to nurture international relations. Interpreting international law solely *textually*, as we can observe among those analysts who defend moves with national legislations related to space mining, is the approach that has a conflictual potential in international relations. We can see the conflict growing quite clearly.

The conservative approach to understanding the role of international law in the international order, namely understanding it as a coercive instrument to keep order, cannot hold up because international society is not a sovereign in the Hobbesian sense that would be capable of enforcing the law to keep order. International society depends on self-help in law enforcement; however, as international society is not sovereign, that self-help falls upon those nation states that are willing

to enforce the principles that preserve the international order. This is a common problem that is strongly criticized by critics of liberal democracy implementation in war-torn countries through doctrines such as peacebuilding, state building and generally humanitarian interventions.[35] Therefore, even the self-help principle does not provide us with certainty that the international law can turn the international anarchy into order. If we take this perspective, understand our sovereignty in a relational and responsible way and therefore reflect on our cosmopolitan responsibilities, we may begin understanding international law as a *positive international morality*.[36] In this regard, sovereignty as autonomy, in contrast to sovereignty as radical political autonomy, is about one's capability to self-govern and develop a foreign policy of space mining that will be welcomed by other states rather than challenged. This political virtue is what could be found behind the concept of a cosmopolitan responsible state. There is no space for excuses stating that a state is willing to support its own national industries and has the right to do it, especially when industries are globalized way more than states in the international community. It will not create harmony, and it will not enable mining without being prone to conflict.

3.2. Cosmopolitanism as a moral guidance

Cosmopolitanism as a philosophical thought builds upon certain moral principles. These are as follows: first, individualism stresses the moral entitlements of every person – every human being is an ultimate moral concern; second, territorial state borders are morally arbitrary because we should reflect on the suffering of others regardless of their ethnic, national or any other socially ascribed association – political borders do not lower our responsibility to others as moral principles should apply to all equally; and third, there is generality – persons in general, not only our

compatriots, are ultimate units of concern to everyone – there is a responsibility to humanity as those principles should be applied generally to all.[37] One direction of the critique of cosmopolitanism perceives cosmopolitanism as a centrist ideology and a utopia seeking a world state, and argues against it by saying that the international system consisting of nation states is natural because it has been created spontaneously from disorder and therefore can serve as the best system for avoiding anarchy in the international order.[38] Zolo, in his critique of the "Holy Alliance", as he calls the community of cosmopolitan scholars, argues that alternative institutional and legal schemes respecting the cultural diversity of various communities around the world should be developed by the modern philosophical thought of international law. Zolo chooses India and China as examples of culturally different countries that have not been built on the individualism and technological and scientific efficiency that are so typical for Western civilization. Especially in the case of space policy, considering these two countries as significant players in space science and/or space commerce or even as players seeking permanent settlements in space would be more than reasonable given their growing scientific and industrial capacities, capabilities and achievements.

Cosmopolitanism, in contrast to Zolo's perception, is not a philosophical school of thought seeking the universalism we can find in the foreign policy interests of the West; cosmopolitanism does not limit itself to seeking a universal world state; it is rather a philosophy that puts diversity forward. In the words of Ulrich Beck: *"cosmopolitanism without provincialism is empty, provincialism without cosmopolitanism is blind."*[5] Beck's *mélange principle* argues exactly against cultural uniformity and reinforces cultural diversity as being critical for multicultural understanding and international stability, and collective and relational responsibilities.

In this perspective, if we embrace cosmopolitanism as a moral guidance, the argument that international law is a *positive international morality* provides substance regardless of whether certain behavior follow principles that are generally accepted. Therefore, the moral principles of the cosmopolitan thought do not flatten diversities but reinforce respect for them and draw the defense of diversities as our responsibility. In this regard, even the different perception of individualism in the sense of individual human rights can be reconciled with cosmopolitanism while we understand that this is a common problem between Asian cultures and the West. However, this is not just a problem of the West in its relations towards China and India; it is also a problem in the other direction. Mutual respect, as the cosmopolitan thought requires, is therefore necessary for all and *sovereignty* is not about radical political autonomy in internal sovereignty providing absolute authority within a state or about external sovereignty providing a state with the ability to act autonomously,[39] but rather about mutual relations and respect and the ability to concede our own responsibility over the consequences of our decisions, and accepting the fact that our decisions have an impact on all people – this is *sovereignty as autonomy*, sovereignty defined as a responsible capability to self-govern with respect to others.[33]

In this sense, seeking what international law does not prohibit misses the purpose behind it. International law's farthest objective is global harmony; thus, we should seek an interpretation that does not challenge it. A cosmopolitan responsible state would seek a national space mining law that would allow mining while fulfilling the cosmopolitan legacy of the OST in norms such as astronauts being envoys of mankind. How could a miner certified by the Luxembourg government be an envoy of mankind if he does not mine for the benefit of all countries?

3.3. Virtues and responsibilities of a cosmopolitan state

Besides the moral cosmopolitan thought, cosmopolitanism is filled with attempts to translate it into political practice – political cosmopolitanism, or institutional practice; institutional cosmopolitanism, or legal practice; and legal cosmopolitanism. Our intention here is not to draw another possible concept of the institutional order on the global level that would govern space mining in the best way; we would rather provide a hint, a guidance for how a state willing to behave responsibly should think about the problem of space mining.

The growing criticism of cosmopolitan universalism and the dismissal of the world state concept led to new concepts that transform moral cosmopolitanism into proposals of political practice. We can now find middle-way ideas such as multi-level governance, dispersed sovereignty, decentralized governance, etc. or, finally, the concept of a *cosmopolitan responsible state*.[40] Wallace Brown puts emphasis on the fact that during the discussion between cosmopolitans the idea of cosmopolitan (oriented) states has been often downplayed because of the generally accepted idea of the illegitimacy of the nation state's existence in general given the moral cosmopolitan principles, and argues that scholars should rather focus on cosmopolitan values that can be practiced by *cosmopolitan responsible states*. This strong argument by Wallace Brown lies in a realist perception of the current international order that consists of nation states instead of looking for barely achievable idealist ends of a possible cosmopolitan world state. Transforming ethical premises into the constitution of a world state cannot be understood as automatic,[41] despite many arguments claiming that it is inevitable[42] or even necessary.[43] Writing down responsibilities towards

others that cross our own borders seems to be significantly easier, achievable and finally desirable in proceeding with an inclusive foreign policy with an impact on all.

Drawing normative premises from moral principles transforming into responsibilities of a nation state is again tricky. The idea of a universal global peace delivered by the democratic West, namely by the western democracies themselves, and sometimes by force, led to strong criticism[44] and finally to a strong denouncement of such politics as colonial.[45] However, various global challenges that are collective problems such as climate change, the pandemic, poverty, terrorism, and nuclear proliferation but also resource insecurities, have a central common denominator – they are *collective action problems* which should be detached from debatable policies such as humanitarian interventions. The pandemic showed very clearly, especially in Europe, how national governments might be able to deliver decisions quickly for their citizens but without a global vaccination campaign we would face new mutations of the Covid virus. A properly set up cooperation for dealing with it should bring benefits to all the involved parties.

Collective action problems in emergency issues on international level require specific virtues[46] on the part of the politicians making decisions: first, reflecting on *global citizenship* provides politicians with a perception that all have the same rights, and no one should be excluded by political decisions such as drawing political borders; the second principle, *justice,* tells us that everybody has the right to receive what is their due, and the third principle, *common humanity,* is, in the words of Appiah,[47] a bridge between the separate domains of morality and ethics, making us members of the same group despite our cultural, political or ethnic differences.

Cosmopolitanism as a virtue, therefore, can be understood as a virtue of key personalities whose decisions have an impact. If these personalities represent a state, they can be a catalyst for responsibilities with a global impact. Therefore, delivering the OST principles in space mining would require certain cosmopolitan virtues.

These virtues that copy the three moral principles of cosmopolitanism, are the basis of a responsible foreign policy. A *responsible cosmopolitan state* is not accountable to its citizens only but understands the broader impact of its decisions on humanity.[48] We can divide this responsibility into passive and active responsibility. While the passive responsibility of a cosmopolitan state reflects the possible negative impacts of its decisions on humanity beyond its borders, an active responsible cosmopolitan state considers the positive impacts of its decisions on humanity in general. It was Gareth Evans, a former minister of foreign affairs of Australia and a proponent of Responsibility to Protect, who argued for a cosmopolitan foreign policy as a national interest.[49] Finally the term *shining city on the hill,* a concept well used in space security discourse,[50] can be, from this perspective, understood as cosmopolitan because a country being a good example that is worth following is nothing else than its having a positive impact on citizens beyond its national borders. Hedley Bull, in his masterpiece *Anarchical Society*, which we used at the beginning of this section, argued that *"to avert a universal 'tragedy of the commons', all men in the long run may have to learn to accept limitations on their freedom to determine the size of their families, to consume energy and other resources and to pollute their environment, and a states system that cannot provide these limitations may be dysfunctional,"*[34] following the claim that the process of creating a common global plan for action in environmental protection is not stalling because of the

nation state system but because of human disagreement over the ecological realm. Breaking this deadlock is still complicated but fifty years after the publication of *Anarchical Society* the world is closer to global action to halt climate change than ever due to the virtues of people considering the rights of humanity as whole. There is no reason why we cannot do the same in the space mining legal framework.

3.4. The Outer Space Treaty as a guidance for a responsible cosmopolitan state

The vague wording of the Outer Space Treaty allows for a broad range of interpretations. In such situations the general rules of interpretation enshrined in the Vienna Convention of the Law of Treaties ("VCLT") are particularly helpful. According to its Article 31, equal attention should be given to both the ordinary meaning of the terms of the treaty and the object and purpose of the treaty being derived, inter alia, from the treaty's preamble (VCLT, Art. 31).[28] Having said that, one can hardly ignore the principle that space exploration and the use of outer space shall be carried out for the *benefit and in the interest of all countries*, which is explicitly mentioned in both the OST's Article I and its preamble (with the difference that the preamble says this about peoples instead of countries). From this perspective, the U.S., Luxembourg, the UAE and Japan's omission of this principle should be viewed as a failure to adopt national space mining-related legislation in a way that is compatible with international space law. What is more, they omitted it regardless of the opposition and concerns expressed by a number of countries.

Our core argument throughout this article is that states should understand themselves not as actors pursuing their interests at the expense of others. On the contrary, states should view themselves as members of the international community, as actors paying due attention to general

interests such as peace, security and development, and as actors actively creating harmony in international relations as well as in outer space. Hence, we advocate the adoption of a national space mining law cautiously reflecting the principle that space exploration and the use of outer space shall be carried out for the *benefit and in the interest of all countries.*

We argue that the Outer Space Treaty consists of principles that visibly deliver a *positive international morality* in the cosmopolitan sense (Art. I: *"equal rights between states irrespective of the degree of their economic or scientific development"*; Art. I: *"outer space should be free for exploration and use by all states"*; Art. V: *"state parties shall regard astronauts as envoys of mankind in outer space"*; Preamble: *"inspired by the great prospects opening up before mankind as a result of man's entry into outer space"*). The opposite approach only causes tension, uncertainty, unpredictability, and instability and leads to conflict. What is more, such a policy increases investment risk and discourages private investors.

Our core argument throughout this article is that the role of states is not to interpret the Outer Space Treaty in a way that will enable them to introduce national laws providing entities from their territory with exclusive access to space resources, but rather to interpret the Outer Space Treaty in a way no one would challenge. The general purpose of the OST was clearly to create harmony in space exploration, and to create a regime that would allow us to explore space without possible interferences between states. One way to do it was to create a regime that would consider the rights of all and attribute the benefits to all. The Outer Space Treaty is filled with principles that visibly deliver a *positive international morality* in the cosmopolitan sense.

As we stated in the beginning of the article, one of the greatest obstacles to mining in space is the legal uncertainty. Global corporations with the ability to invest the most into space mining infrastructure simply need a stable and predictable legal environment as well as assurances that their operations will not be challenged. It is our responsibility to provide corporations with a predictable regime in space without compromising the principles of international space law and the OST in particular in order to incentivize space mining.

3.5. Towards a responsible cosmopolitan state in space mining

There are two approaches for moving forward in space mining. The first prioritizes national interests and aims to proclaim their compatibility with international space law, which in this case is interpreted without taking into consideration its objectives. Exclusive rights and benefits are at the core of this effort. The second is visibly more difficult because it requires political creativity. However, this challenging process of seeking consensus over the common benefits is exactly what the drafters of the Outer Space Treaty expected from us decades later. Our generation has a much better understanding of the Solar System and is equipped with much more sophisticated technologies than the generation of those who drafted the OST in the 60s. Our generation is free to decide whether and how outer space should be used. There are only a few limitations here, but they are important. First and foremost, the interests of all states as well as mankind should not be jeopardized.

We fully understand that breaking the deadlock in the debate over the legality of space mining needed some radical moves that would shake up the international community. Adopting national laws with a focus on exclusive rights served this purpose perfectly. However, the next steps shall

be focused on consensual results as international law is, in the words of Hedley Bull, *a normative plane* and *a social reality* providing states with transparency, confidence and predictability.[34]

First, the purpose of the Outer Space Treaty was to make a harmony on the way towards the newly opened windows to space exploration. We should look at the Outer Space Treaty as being an inspiration for how we should think about our shared future as a species – that is, we should think about it inclusively. International law in general is a source for *positive international morality,* and the Outer Space Treaty is a source of inspiration based on this morality that counts all *peoples* (regardless of whether the word "people" is interpreted as nations or humankind) and all *countries* along with their interests in, nurturing the international relations connected with space exploration by treating everybody and every state *equally*.

Compliance with the requirement that the exploration and use of outer space shall be carried out for the benefit and in the interest of all countries appears to be a truly ambitious task but a clearly cosmopolitan one. Here, we propose a simple solution. The international community has already agreed on what is in the interest of humankind – the 2030 Agenda for Sustainable Development is a shared blueprint for peace and prosperity for people and the planet, now and into the future. The 17 Sustainable Development Goals (SDGs) are understood as an urgent call for action by all countries – both developed and developing – in a global partnership.[51] The effort to achieve the SDGs constantly suffers from a lack of funding or other resources; hence a redistribution of some profits from resource exploitation towards achieving the SDGs, as all countries already agreed that the efforts to do so need to be funded, can both significantly boost the global development agenda and allow states to comply with Art. I of the OST. It should be

emphasized that the SDGs were agreed upon by the UN member countries to solve some of humanity's biggest challenges. Some of the next challenges for which we will need funding are inherently global ones and include planetary defense, orbital debris removal, and maybe one day building an electromagnetic shield against coronal mass ejections, among others. Moreover, national space mining-related legislations referring to the 2030 Agenda may stimulate commercial companies in finding new and innovative ways for humankind to benefit from the exploration and use of outer space as much as possible. They could include all states and their capacities, from human resources to any other resources that are needed for the operations, which would lead to a deeper cooperation and broader inclusivity. Given the already agreed interests of all countries, the requirement that the exploration and use of outer space shall be carried out for the benefit and in the interest of all countries may be easily met. What is more, the discussion about space benefits can get completely new and desirable dynamics in terms of how to shape inclusivity rather than how to avoid exclusivity, and how to develop a "welfare international community" on the basis and experience of welfare nation states.

4. Conclusion

We are in a situation in which space mining is becoming technologically feasible, while the related activity levitates in a legal uncertainty that discourages the private sector from making significant investments in this sector. States tend to stick to their national interests. It is kind of natural for a politician elected on behalf of a particular state to serve its interests; however, national interests should be based on a relational understanding of sovereignty that recognizes that we do not live in a political vacuum, that states and peoples exist in relations, and that their political

existence fully depends on mutual understanding and recognition and not on radical political autonomy. Understanding international law as a *social process* or *normative plane* covering the substance of the mutual recognition enables us to understand its *purpose* in creating harmony and a *positive international morality* no one would challenge because it creates bridges of mutual understanding. Nation states that are able to recognize these principles and understand their role as agents for cosmopolitan responsibilities will break the deadlock and open the gates for space mining. Thinking responsibly in a cosmopolitan way will not only fulfil the initial purpose of the international law stipulated in the Outer Space Treaty but also provide legal certainty and stimulate private investments in space mining. Unilateral attempts to create a legal framework for space mining without paying due attention to the interests of other members of the international community only trigger conflicts and tensions. We believe that humanity can break the deadlock of space mining, which is still in a state of legal uncertainty, exactly by this creativity that involves having cosmopolitan responsibility in mind, and that it can finally begin talking about how to fill the common benefit clause with a specific substance that will lead to human flourishing in space.

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